load computation means for computing an automobile load of said automobile;

output torque estimation means for calculating an output torqrue based on torque characteristics of a drive train of said automobile;

running load estimation means for estimating a running load from the automobile load and said output torque;

memory means for storing at least two shift schedules therein; and

a shift schedule variable-control unit which determines a shift schedule of an automatic transmission of said drive train during actual running of said automobile, on the basis of the estimated running load and the stored shift schedules.

2. (Twice Amended) An automatic transmission control system for an automobile as defined in Claim [1] 23, wherein said output torque estimation means calculates said output torque in response to, [at least] torque characteristics of a torque converter of said automatic transmission and torque characteristics of an engine of said drive train.

3. (Twice Amended) An automatic transmission control system for an automobile as defined in Claim [1] 23, wherein said output torque estimation means calculates said output torque by calculating an output torque of a torque converter of said

automatic transmission in response to, [at least] torque characteristics of a torque converter and torque characteristics of an engine of said drive train, and by multiplying the calculated output torque [of said torque converter] by a gear ratio of a gear stage of said automatic transmission corresponding to a shift instruction.

5. (Twice Amended) An automatic transmission control system for an automobile as defined in Claim [1] 23, wherein said output torque estimation means calculates said output torque by [changing over between] selecting one of the torque characteristics of an engine of said drive train and [those] the torque characteristics of a torque converter of said automatic transmission when a ratio between an input revolution speed and an output revolution speed of said torque converter has exceeded a first predetermined value.

6. (Twice Amended) An automatic transmission control system for an automobile as defined in Claim [1] 23, further comprising:

a neural network which receives values of at least a throttle valve opening and an acceleration so as to learn values of a vehicle weight corresponding to the values supplied beforehand;

[said load computation means comprising vehicle weight estimation means for estimating said vehicle weight of said automobile; and]

wherein said vehicle weight estimation means [estimating] estimates said vehicle weight by time-serializing each of at least said throttle valve ~~opening~~ and said acceleration and then supplying resultant time-serial signals to said neural network.

37. (Twice Amended) An automatic transmission control system for an automobile as defined in Claim ~~6~~ 2, wherein said vehicle weight estimation means includes means for supplying said time-serial signals of said throttle valve opening and said acceleration to said neural network ~~commencing~~ when said throttle valve opening has exceeded a ~~second~~ first predetermined value and said acceleration has also exceeded a ~~third~~ second predetermined value.

8. (Twice Amended) An automatic transmission control system for an automobile as defined in Claim [1] 23, wherein said shift schedule variable-control unit varies a [speed change line] gear shift boundary of said automatic transmission continuously in response to [said] the estimated running load and the estimated weight of the automobile.

10. (Twice Amended) An automatic transmission control system for an automobile as defined in Claim [1] 23, wherein said shift schedule variable-control unit varies a [speed change line] gear shift boundary of said automatic transmission continuously in response to an inclination angle of the automobile when [it] the automobile is in motion and a vehicle weight of said automobile.

11. (Twice Amended) An automatic transmission control system for an automobile as defined in Claim [1] 23, wherein said shift schedule variable-control unit varies a [speed change line] gear shift boundary of said automatic transmission continuously in response to an inclination angle of the [when it is in motion] automobile when the automobile is in motion, vehicle weight of said automobile, and a request for an accelerating operation made by a driver of said automobile.

13. (Twice Amended) An automatic transmission control system for an automobile as defined in Claim [1] 23, wherein:

said vehicle weight estimation means estimates said vehicle weight of said automobile in response to a throttle valve opening signal and a vehicle speed signal in addition to said acceleration signal; and

said output torque estimation means estimates said output torque in response to a revolution speed signal of an engine of said drive train and a turbine revolution speed signal of a torque converter of said automatic transmission[; and

said running load estimation means estimates said running load in response to said acceleration signal, said estimated vehicle weight and the estimated output torque].

14. (Twice Amended) An automatic transmission control system for an automobile as defined in Claim [12] 23, wherein said output torque estimation means has a first mode in which

said output torque is estimated from a turbine revolution speed of a torque converter of said automatic transmission and a revolution speed of an engine of said drive train, and a second mode in which said output torque is estimated from a throttle valve opening of said engine and said ~~revolution~~ speed of said engine, one of said first and second modes being [established] selected in response to a revolution ration of a torque converter of said automatic transmission.

17. (Twice Amended) An automatic transmission control system for an automobile as defined in Claim [12] 23, further comprising start signal generation means for [delivering] generating an acceptance start signaling synchronism with rise of said acceleration signal [when said acceleration signal is to be accepted] to trigger the receiving operation of said acceleration input means.

18. (Amended) Method of controlling an automatic transmission for an automobile having means for storing a plurality of shift schedules for said automatic transmission, said method comprising the steps of:

first, calculating [a value for an] an estimated weight of said automobile [load of said automobile and generating an automobile load signal indicative thereof];

second, determining acceleration of said automobile;

[second] third, calculating a value for an output torque of said transmission based on torque characteristics of a drive train of said automobile and generating an output torque signal indicative of said output torque value;

[third] fourth, estimating a running load of said automobile based on said estimated weight of ~~said~~ automobile, [load signal and said] the acceleration, and the output torque signal; [and]

[fourth] fifth, selecting a shift schedule from among a plurality of shift schedules stored in said means for storing, based on the estimated running load and the estimated weight of the automobile[.]; and

sixth, selecting a gear position of said automatic transmission based on the selected shift schedule.

Claim 19, line 1, change "second" to --third--.

20. (Amended) Method according to Claim 18, wherein said third step comprises calculating said output torque based on at least torque characteristics of a torque converter of said automatic transmission, and [those] the torque characteristic of an engine of said drive train.

Claim 21, line 1, change "second" to --third--.

Claim 22, line 1, change "second" to --third--.

--23. An automatic transmission control system for an automobile, comprising:

weight estimation means for estimating a total weight of said automobile;

acceleration input means for receiving an acceleration signal indicative of acceleration of said automobile;

output torque estimation means for calculating an output torque based on torque characteristics of a drive train of said automobile;

running load estimation means for estimating a running load from the estimated weight of the automobile, the acceleration, and the estimated output torque;

memory means for storing at least two shift schedules therein;

a shift schedule variable-control unit which determines a shift schedule of an automatic transmission of said drive train during actual running of said automobile on the basis of the estimated running load, the estimated weight of the automobile and the stored shift schedules; and

gear shift determination means for selecting a gear position of said automatic transmission based on the determined shift schedule.